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10/662,799	09/12/2003	Mukund Raghavachari	YOR920030346	9501

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MICHAEL J. BUCHENHORNER, ESQ  
HOLLAND & KNIGHT  
701 BRICKELL AVENUE  
MIAMI, FL 33131

EXAMINER

BOTTS, MICHAEL K

ART UNIT PAPER NUMBER

2176

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/662,799	RAGHAVACHARI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Michael K. Botts	2176	

**~ The MAILING DATE of this communication appears on the cover sheet with the correspondence address ~**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2003 and 16 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This document is the first Office Action on the merits. This action is responsive to the following communications: The Non-Provisional Application, which was filed on September 12, 2003, and a Status Inquiry, which was filed on September 16, 2005.
2. Claims 1-29 have been examined, with claims 1, 28, and 29 being the independent claims.
3. The Drawings are objected to.
4. The Abstract is objected to.
5. The Specification is objected to.
6. Claims 1-29 are rejected.

### ***Drawings***

The drawings are objected to because of the following:

- a) Figure 1 is not clear and would not be able to be satisfactorily reproduced for printing. See, MPEP 608.02(l).
- b) The legend of Figure 1 is excessively long. See, MPEP 608.02(o).
- c) Figure 1 is improperly identified and not larger than the numbers used for the reference characters. See, MPEP 608.02.
- d) The Figure legends in Figures 2, 4, 5, and 6 are not readily identifiable from the figure itself. It is suggested that the Figure legends be placed at the bottom center of the page within the margins. See, MPEP 608.02.

e) Figure 8 improperly contains case identification information within the margins of the figure. See, MPEP 608.02(g).

f) Figures 2-9 contain lead lines that are not standard and are confusing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because of the reasons identified above. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are

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required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

## **INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

### **Replacement Drawing Sheets**

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

### **Annotated Drawing Sheets**

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

### **Timing of Corrections**

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the

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provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

***Abstract of the Disclosure***

8. The abstract of the disclosure is objected to because of excessive length.

Correction is required. See MPEP § 608.01(b).

9. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

***The Specification***

10. Applicant is required to update the status (pending, allowed, etc.) of all parent priority applications in the first line of the specification. The status of all citations of U.S. filed applications in the specification should also be updated where appropriate.

11. The attempt to incorporate subject matter into this application by reference to an article titled "Documents Revalidated: Casting XML Documents in a Different Light" is ineffective because the document does not appear in the prosecution file. See, disclosure, page 12, lines 7-12. Unless the article has been previously filed with this application, filing of the article in response to this Office Action will be considered inadmissible new matter, because the reference is so vague that it would be impossible to verify any new document as being the one referenced at the time of the application.

12. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claims Rejections – 35 U.S.C. 112, First Paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. **Claim 29** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed limitation element types that are “always valid,” “possibly valid,” and “always invalid” are not defined in the specification and are not standard terms and are not such that they would have a technical meaning that would have been known to one of ordinary skill in the art at the time of the invention.

14. In the interest of compact prosecution, the application is further examined against the prior art, as stated below, upon the assumption that the applicants may overcome the above stated rejection under 35 U.S.C. 112, first paragraph.

***Claims Rejections – 35 U.S.C. 112, Second Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. **Claims 1-3, 28, and 29** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **independent claim 1**, claim 1 claims “preprocessing” to “compute information to assist in validation of [the second schema].” The “preprocessing” limitation and the “compute information” elements are indefinite and render the claim



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indefinite because those terms have such broad meaning that they could include essentially any examination function, from a cursory visual scan to a technical analysis in the utmost detail.

Regarding **dependent claims 2 and 3**, claims 2 and 3 further limit “preprocessing” to comprise comparing the two schemas to “determine relationships.” The “preprocessing” element is indefinite for the reasons identified in the rejection of claim 1 under 35 U.S.C. 112, second paragraph, above. The “determine relationships” element is indefinite because “determining” a relationship may take any form from gross analysis of size or color of text to a detailed analysis. Likewise, a “relationship” may be superficial or complex depending on the particular relationship examined and the method used to determine the relationship.

Regarding **independent claim 28**, claim 28 claims “comparing” two schemas to determine whether a document is “valid” as between the first and second schemas. The “comparing” element is indefinite because the comparison may be on a variety of levels from the most cursory to the most technical, and the claim does not identify which level of comparison is claimed in association with determining validity.

Regarding **independent Claim 29**, claim 29 claims element types that are “possibly valid,” which are not defined in the specification and are not standard terms and are not such that they would have a technical meaning that would have been known to one of

ordinary skill in the art at the time of the invention. The determination of a "possibly valid" element type state is not sufficient to distinctly claim the invention. Further, claim 29 claims to "examine any individual elements of the possibly invalid element types to determine if said individual elements are invalid in the second schema," but the "examination" is not distinctly claimed as to what "examination" applicant regards as the invention. An element that was not known to be either "valid" or "not valid" could be examined in many degrees and in many contexts.

16. In the interest of compact prosecution, the application is further examined against the prior art, as stated below, upon the assumption that the applicants may overcome the above stated rejection under 35 U.S.C. 112, second paragraph.

### ***Claims Rejections – 35 U.S.C. 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

17. **Claims 1-7 and 28** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The cited claims are directed to nonfunctional descriptive material in that it is not structurally or functionally interrelated to a computer-readable medium. The claims limitations are limited to preprocessing two document schemas to "compute information to assist in the validation" of the second schema. The "preprocessing" is claimed a "determining relationships."

18. **Claims 1-7 and 28** do not fall within the judicial exceptions to 35 U.S.C. 101, in that the inventions do not produce a useful, concrete, and tangible result.

19. In the interest of compact prosecution, the application is further examined against the prior art, as stated below, upon the assumption that the applicants may overcome the above stated rejection under 35 U.S.C. 101.

***Claims Rejections – 35 U.S.C. 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. **Claims 1-3, 10, 11, and 28** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Thompson, Henry S., et al., "A Standards-based XML Schema Implementation Comparison Framework," HCRC Language Technology Group, World Wide Web Consortium, paper presented at Extreme Markup Languages 2001, August 14-17, 2001, last downloaded by the Examiner January 31, 2006 from:  
<http://www.mulberrytech.com/Extreme/Proceedings/xslfo-pdf/2001/Thompson01/EML2001Thompson01.pdf>, downloaded pages cover and pages 1-7 [hereinafter "Thompson"].

Regarding **independent claim 1**, Thompson teaches:

*A method of validating a document with respect to a second schema given the knowledge that the document is valid with respect to a first schema, said method comprising:*

*preprocessing said first schema and said second schema to compute information to assist in the validation of the document with respect to said second schema.*

(See, Thompson, pages 1-7, teaching comparison of a valid XML document to a second schema to assist in the validation of the document with respect to the second schema.)

Regarding **dependent claim 2**, Thompson teaches:

*The method of claim 1 wherein the step of preprocessing comprises comparing said first schema and said second schema to determine relationships between said first schema and said second schema.*

(See, Thompson, pages 1-7, teaching determining the relationships between the first and second schemas.)

Regarding **dependent claim 3**, Thompson teaches:

*The method of claim 2 wherein the step of preprocessing comprises determining relationships between types defined in said first schema and said second schema.*

(See, Thompson, pages 1-7, teaching determining the relationships between types defined in the first and second schemas.)

Regarding **dependent claim 10**, Thompson teaches:

*The method of claim 3 wherein types assigned to document elements while validating with respect to said first schema are used to validate the document with respect to said second schema.*

(It is inherent that comparing the first and second schema, with regard to a valid first schema, that the valid types from the first schema would be used to validate the second schema.)

Regarding **dependent claim 11**, Thompson teaches:

*The method of claim 10 wherein said types assigned to said document elements while validating with respect to said first schema are provided with said document.*

(It is inherent that comparing the first and second schema, with regard to a valid first schema, that the valid types from the first schema would be used to validate the second schema. Further, it is inherent that the elements would be provided with, or part of, the first schema.)

Regarding **independent claim 28**, Thompson teaches:

*An information handling system for validating a document that has been determined to be valid with respect to a first schema in accordance with a second schema; said information handling system comprising:*

*a processor for comparing said first schema to said second schema and determining whether a document determined to be valid with respect to said first schema is valid with respect to said second schema based upon said comparison.*

(Note that a “processor” within an “information handling system for validating a document” is read to include software. There is nothing in the specification that indicates that the “processor” is any type of specialized hardware. See, Thompson, page 1, teaching that no special-purpose software, “processor,” is required for the schema comparison.)

21. It is noted that any citations to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. See, MPEP 2123.

***Claims Rejection – 35 U.S.C. 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. **Claims 4-9, 12-27, and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson, Henry S., et al., "A Standards-based XML Schema Implementation Comparison Framework," HCRC Language Technology Group, World Wide Web Consortium, paper presented at Extreme Markup Languages 2001, August 14-17, 2001, last downloaded by the Examiner January 31, 2006 from:  
<http://www.mulberrytech.com/Extreme/Proceedings/xslfo-pdf/2001/Thompson01/EML2001Thompson01.pdf>, downloaded cover page and pages 1-7 [hereinafter "Thompson"] as applied to claims 1-3 above,  
in view of Thompson, Henry S., "W3C XML Schema Test Collection," W3C, January 16, 2002, last downloaded by the Examiner on January 31, 2006 from:  
<http://www.w3.org/2001/05/xmlschema-test-collection.html>, downloaded pages 1-9, [hereinafter "Schema Tests"],  
and further in view of a subset of test results from Microsoft on complex type elements, last downloaded by the Examiner on February 1, 2006 from:  
<http://www.w3.org/XML/2001/05/xmlschema-test-collection/result-ms-complexType.htm>, downloaded pages 1-178, which are linked to the "W3C XML Schema Test Collection."

[The Microsoft complex type test results referred to hereinafter as "Microsoft Complex Type Test Results."].

Thompson teaches the validation of a second schema by comparison to a first valid schema. Thompson does not teach the specific tests for validation.

Schema Tests teaches specific tests for validation of a second schema compared against a first valid schema.

Microsoft Complex Type Test Results teach comparisons under hundreds of variations and the results of the comparison testing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references because they all involve the same art, comparison testing of XML schemas for validation purposes. The suggestion to combine the two references is explicit in Thompson wherein it cites the reader to the schema test collection homepage, which links directly to test results by Sun, NIST, and Microsoft (including the Microsoft Complex Type Test Results). See, Thompson, page 7, bottom of the first partial paragraph, citing to "<http://www.w3.org/2001/05/xmlschema-test-collection.html>."

The above discussion of the limitation and combinations of Thompson, Schema Tests, and Microsoft complex test results above are incorporated into the rejections of the specific claims below, with more specific references cited in the rejection of the claims as needed.



Regarding **dependent claim 4**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 3 wherein a type defined in said second schema is identified as a subsumed type if a relationship exists between a type in said first schema and said type in said second schema such that portions of a document that are valid with respect to said type in said first schema are also valid with respect to said type in said second schema.*

(See, Schema Tests, and also see, Microsoft Complex Type Test Results "ctH019" at page 125 of 178 showing a comparison test result with a valid second schema in the Msv Crimson and XSV test results.)

Regarding **dependent claim 5**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 3 wherein a type defined in said second schema is identified as a disjointed type with respect to a type in said first schema if a relationship exists between said type in said first schema and said type in said second schema such that portions of a document that are valid with respect to said type in said first schema are not valid with respect to said type in said second schema.*

(See, Schema Tests, and also see, Microsoft Complex Type Test Results "ctH019" at page 125 of 178 showing a comparison test result with a not valid second schema in the Xerxes test result.)

Regarding **dependent claim 6**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 3 wherein a type defined in said second schema is identified as an intersecting type if a relationship exists between a type in said first schema and said type in said second schema such that some portions of a document that are valid with respect to said type in said first schema are valid with respect to said type in said second schema and some portions of a document that valid with respect to said type in said first schema are invalid with respect to said type in said second schema.*

(See, Schema Tests, and also see, Microsoft Complex Type Test Results "ctH019" at page 125 of 178 showing a comparison test result with a not valid second schema in the Xerxes test result. It would have been obvious to one of ordinary skill in the art at the time of the invention that a schema that was invalid as to part of the schema would have been invalid as to all of the schema. A partially invalid schema is obviously invalid.)

Regarding **dependent claim 7**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 3 wherein said relationships between said types defined in said first schema and said second schema are used to determine whether said document is valid or invalid in said second schema.*

(See, Schema Tests, and also see, Microsoft Complex Type Test Results "ctH019" at page 125 of 178 showing a comparison test result with a not valid second schema in the Xerxes test result and a valid second schema in the Msv Crimson and XSV tests.)

Regarding **dependent claim 8**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 5 wherein a document is determined to be invalid with respect to said second schema if said document contains types that are identified as disjointed.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to declare that a comparison of schemas in which there are no common types could be declare the second schema valid. This obviousness is because there is no basis from the comparison to determine that the second schema is not valid.)

Regarding **dependent claim 9**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 4 wherein any portions of a document that are of a subsumed type are immediately accepted as valid with respect to said second schema.*

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(It would have been obvious to one of ordinary skill in the art at the time of the invention to declared that valid portions of a schema are valid. This is obvious because a valid portion is, by definition, valid.)

Regarding **dependent claim 12**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 10 wherein said types assigned to the document elements during validation with respect to said first schema are computed while validating said document with respect to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to validate a first schema while testing validity of a second schema, in order to process large data sets quickly. Thompson teaches multiple processors for each of the first and second schema. See, Thompson, page 2.

Regarding **dependent claim 13**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 10 wherein a document is deemed invalid if a type assigned to a document element during validation with respect to said first schema is in a disjoint relationship with a type in said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to declared that a schema is not valid when a comparison to a valid schema determines

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that a portion of the schema is not valid. This is obvious because a not valid portion renders, by definition, the entire second schema to be not valid.)

Regarding **dependent claim 14**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 10 wherein a document element is deemed valid if said document element is assigned a type during validation with respect to said first schema that is in a subsumed type relationship with a type in said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to declared that valid portions of a schema are valid. This is obvious because a valid portion is, by definition, valid.)

Regarding **dependent claim 15**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 10 wherein said computed information and said assignment of types when said document is validated with respect to said first schema are used to determine portions of said document that are to be validated according to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention that the portions of the first schema that are validated are used to validate the second

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schema. The invention claims that the first document is validated, and valid portions of the first schema are, by definition, used to validate the second schema.)

Regarding **dependent claim 16**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 15 wherein a portion of said document is validated according to said second schema if said type assigned to said portion of said document during validation with respect to said first schema is in an intersecting relationship with a type in said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention that the roles of the first and second schemas could be reversed, so long as the schema in question is being validated by a valid schema.)

Regarding **dependent claim 17**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 16 wherein the preprocessing comprises developing an automaton from a first type in said first schema and a second type in said second schema that are in an intersecting relationship to determine if a portion of said document that is assigned said first type during validation with respect to said first schema is valid with respect to said second type during validation with respect to said second schema.*

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(It is noted that a “automaton” is defined in the disclosure as follows: “an immediate decision automaton” and as “a simple computation device.” See, declaration, paragraph [0012]. The “immediate decision automaton” is disclosed with a purpose to analyze a modified schema only up to a point where it is determined that there are no further modifications. See, disclosure, paragraph [0015]. It would have been obvious to one of ordinary skill in the art at the time of the invention to only conduct a comparison test on a schema that was known to be valid prior to modification only up to the point where the modifications stop, because the remainder of the schema is known to be valid.)

Regarding **dependent claim 18**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 1 wherein said first schema and said second schema are one of a regular expression, document type definition, finite state automata, XML schema and tree automata.*

(It is noted that the elements of claim 18 are read as alternative members of a Markush group. See, Schema Tests, and also see, Microsoft Complex Type Test Results teaching comparing XML schema.)

Regarding **dependent claim 19**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 1 wherein said document is one of a string, data set, XML document, ordered tree and tree.*

(It is noted that the elements of claim 19 are read as alternative members of a Markush group. See, Schema Tests, and also see, Microsoft Complex Type Test Results teaching comparing XML document.)

Regarding **dependent claim 20**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 3 wherein said types are one of states in a finite state automaton, element type declarations in an XML schema, programming language types and states in a tree automaton.*

(It is noted that the elements of claim 20 are read as alternative members of a Markush group. See, Schema Tests, and also see, Microsoft Complex Type Test Results teaching comparing XML schema.)

Regarding **dependent claim 21**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 1 comprising examining said document and determining if any portions of said document have been modified subsequent to said document being validated in said first schema and limiting portions of the document to be validated based upon which portions of said document have been modified.*



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(It would have been obvious to one of ordinary skill in the art at the time of the invention to run a comparison test on a schema prior to validating a schema if one thought the schema may have been modified subsequent to validation. A comparison between two documents to determine modification was well known by one of ordinary skill in the art at the time of the invention.)

Regarding **dependent claim 22**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 21 comprising identifying elements of said document that have been inserted and examining any elements that have been inserted to determine if they are valid with respect to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to run a comparison test on a schema prior to validating a schema if one thought the schema may have been modified subsequent to validation. A comparison between two documents to determine modification was well known by one of ordinary skill in the art at the time of the invention. Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to test only the modified portions of the test schema because the remainder of the schema would be known to be valid by virtue of the prior comparison.)

Regarding **dependent claim 23**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 21 comprising identifying elements of said document that have been renamed and using a determined relationship between said renamed elements and said element prior to being renamed when validating said renamed elements with respect to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to run a comparison test on a schema prior to validating a schema if one thought the schema may have been modified subsequent to validation. A comparison between two documents to determine modification was well known by one of ordinary skill in the art at the time of the invention. Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to test only the renamed portions of the test schema because the remainder of the schema would be known to be valid by virtue of the prior comparison.)

Regarding **dependent claim 24**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 21 comprising identifying elements of said document that have been deleted and ignoring any deleted elements when validating said document with respect to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to ignore deleted elements because a deleted element obviously has no influence on an otherwise valid schema.)

Regarding **dependent claim 25**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 21 wherein the information computed comprises a set of modification specifications such that a modification specified by said set of modification specifications results in the document being valid according to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to allow modified specifications to be permitted within the information computed and, assuming the modified specifications were valid, to conclude that the entire document was valid, provided the un-modified portions were already determined to be valid.)

Regarding **dependent claim 26**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 21 wherein the information computed comprises a set of modification specifications such that a modification specified by said set of modification specifications results in a document being invalid according to said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to allow modified specifications to be permitted within the information computed and, assuming the modified specifications were not valid, to conclude that the entire document was not valid.)

Regarding **dependent claim 27**, Thompson in view of Schema Tests and further in view of Microsoft Complex Type Test Results teaches:

*The method of claim 1 wherein said document has been modified subsequent to being validated in said first schema and wherein said first schema is the same as said second schema.*

(It would have been obvious to one of ordinary skill in the art at the time of the invention to declare a second schema that is the same as a valid first schema to also be valid.)

Regarding **independent claim 29**, Thompson in view of Schema Tests teaches:

*A method of determining whether a document conforming to a first schema may be cast in a second schema without validating every element of said document in accordance with said second schema, said method comprising:*

*identifying element types in the first schema that are always valid in the second schema and not examining individual elements in the document that are of the always valid element types in the second schema;*

*identifying element types in the first schema that are possibly invalid in the second schema and examining any individual elements of the possibly invalid element types in the document to determine if said individual elements are invalid in the second schema;*

*identifying element types in the first schema that are always invalid in the second schema and determining whether any always invalid element types are in said document; and*

*identifying the document as valid in the second schema only if no always invalid elements types and no invalid individual elements were identified in the document.*

(In the interest of compact prosecution, the Examiner believes the applicants to have intended the following correlations between the disclosure and the claims, and upon such belief the following terms will be read as stated for the remainder of this Office Action: 1) the claimed "always valid" type is the equivalent of the "subsumed type-pairs" identified in the disclosure at paragraph [0010]; 2) the claimed "always invalid" type is the equivalent of the "disjointed type-pairs" identified in the disclosure at paragraph [0010]; and, 3) the claimed "possibly invalid" type is the equivalent of the "intersecting type-pairs" identified in the disclosure at paragraph [0010].

See, Thompson, pages 5-7, teaching comparison of the schemas and validating and invalidating the second schema based on the comparison. See also, Microsoft Complex Type Test Results teaching identifying valid and invalid schemas. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further examined the invalid type pairs to determine if there was a technical reason that they were invalidated, for example if attributes were the same but in a different order. See, Thompson, pages 5-7, teaching that the details of the schema comparisons may be adjusted to further examine differences.)

23. It is noted that any citations to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. See, MPEP 2123.

### ***Conclusion***

24. The following prior art is made of record and not relied upon that is considered pertinent to applicants' disclosure:

"XML Schema Test Results, Microsoft: simpleType," published as a part of Thompson, Henry S., "W3C XML Schema Test Collection," W3C, January 16, 2002, Microsoft simple type test results last downloaded by the Examiner on February 1, 2006 from: <http://www.w3.org/2001/05/xmlschema-test-collection/result-ms-simpleType.htm>, downloaded pages 1-62.

"XML Schema Test Results – 16 January 2002 – Sun contributions, full report," published as a part of Thompson, Henry S., "W3C XML Schema Test Collection," W3C, January 16, 2002, Sun contributions, full report last downloaded by the Examiner on February 1, 2006 from: <http://www.w3.org/2001/05/xmlschema-test-collection/resultSun.htm>, downloaded pages 1-36.

Tobin, R. and Thompson, H., "A schema for serialized infosets," paper, published on the Internet as of June 24, 2003, last downloaded by the Examiner on January 31, 2006, from: <http://www.w3.org/2001/05/serialized-infoset-schema.html>, downloaded pages, including attached Web Archives pages, 1-8.

Gkoutos, Rzepa, and Murray-Rust, "Online Validation and Comparison of Molfile and CML Molecular Atom-Connection Descriptors, paper, published on the Internet as of June 24, 2003, last downloaded by the Examiner on January 31, 2006, from: <http://web.archive.org/web/20030624230758/http://www.ch.ic.ac.uk/gkoutos/stev e/>, downloaded pages 1-8.

Eckstein, R., "XML Pocket Reference," O'Reilly & Associates, Inc., October 1999, chapter and section 1.4, downloaded from ProQuest Safari Tech Books Online, downloaded pages 1-23.

Individuals associated with the filing or prosecution of a patent application are reminded of their obligations pursuant to 37 CFR 1.56. See generally, MPEP 2001 and subsections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael K. Botts whose telephone number is 571-272-

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5533. The examiner can normally be reached on Monday Thru Friday 8:00-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon can be reached on 571-272-4136. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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HEATHER R. HERNDON  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2176